

WHAT IS CLAIMED IS:

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1. A golf ball comprising:  
a dual core comprising a center component, and  
a core layer disposed about said center component;  
an inner cover layer molded on said dual core,  
5 the inner cover layer comprising a high acid ionomer  
including at least 16% by weight of an alpha, beta-  
unsaturated carboxylic acid; and  
an outer cover layer molded on said inner cover  
layer, said outer cover layer comprising a relatively  
10 soft polymeric material selected from the group  
consisting of low flexural modulus ionomer resins and  
non-ionomeric thermoplastic elastomers.

2. A golf ball according to claim 1, wherein said  
center component comprises a material selected from the  
group consisting of thermosets, thermoplastics, and  
combinations thereof.

3. A golf ball according to claim 1, wherein said  
core layer comprises a material selected from the group  
consisting of thermosets, thermoplastics, and  
combinations thereof.

4. A golf ball according to claim 1, wherein the  
inner cover layer comprises a high acid ionomer resin  
comprising a copolymer of about 17% to about 25% by  
weight of an alpha, beta-unsaturated carboxylic acid.

5. A golf ball according to claim 1, wherein the  
inner cover layer comprises a high acid ionomer resin  
comprising a copolymer of about 18.5% to about 21.5% by  
weight of an alpha, beta-unsaturated carboxylic acid.

6. A golf ball according to claim 1, wherein the  
inner cover layer has a thickness of about 0.100 to about

0.010 inches and the outer cover layer has a thickness of about 0.010 to about 0.05 inches, the golf ball having an 5 overall diameter of 1.680 inches or more.

7. A golf ball according to claim 1, wherein the inner cover layer has a thickness of about .030" - .0375" inches and the outer cover layer has a thickness of about .030" - .0375" inches, the golf ball having an overall 5 diameter of 1.680 inches or more.

8. A golf ball according to claim 1, wherein the outer layer comprises a low flexural modulus ionomer resin which includes a blend of a hard high modulus ionomer with a soft low modulus ionomer, the high modulus 5 ionomer being a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, the low modulus ionomer being a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon 10 atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms.

9. A golf ball according to claim 8, wherein the outer layer composition includes 90 to 10 percent by weight of the hard high modulus ionomer resin and about 10 to 90 percent by weight of the soft low modulus 5 ionomer resin.

10. A golf ball according to claim 8, wherein the outer layer composition includes 75 to 25 percent by weight of the hard high modulus ionomer resin and about 25 to 75 percent by weight of the soft low modulus 5 ionomer resin.

11. A golf ball according to claim 1, wherein the non-ionomeric thermoplastic elastomer is a polyester polyurethane.

12. A golf ball according to claim 1, wherein the non-ionomeric thermoplastic elastomer is a polyester elastomer.

13. A golf ball according to claim 1, wherein the non-ionomeric thermoplastic elastomer is a polyester amide.

14. A multi-layer golf ball comprising:

a dual core component comprising an interior spherical center component and a core layer disposed about said spherical center component;

5 an inner cover layer molded over said core layer of said dual core component to form a spherical intermediate ball, said inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a 10 modulus of from about 15,000 to about 70,000 psi; and  
an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and  
15 an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer 20 cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

15. A golf ball according to claim 14, wherein said center component comprises a material selected from the group consisting of thermosets, thermoplastics, and combinations thereof.

16. A golf ball according to claim 14, wherein said core layer comprises a material selected from the group

consisting of thermosets, thermoplastics, and combinations thereof.

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17. A multi-layer golf ball comprising:  
a spherical dual core;  
an inner cover layer molded over said spherical dual core to form a spherical intermediate ball, said 5 inner cover layer comprising an ionomeric resin including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,1000 to about 70,000 psi; and  
an outer cover layer molded over said spherical 10 intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric thermoplastic selected from the group consisting of polyester elastomer, polyester polyurethane and polyester amide, said outer cover layer having a modulus in a range of 15 about 1,000 to about 30,000 psi.

18. A golf ball according to claim 17, wherein said dual core comprises a center component and a core layer disposed about said center component, said center component comprises a material selected from the group 5 consisting of thermosets, thermoplastics, and combinations thereof.

19. A golf ball according to claim 18, wherein said core layer comprises a material selected from the group consisting of thermosets, thermoplastics, and combinations thereof.

20. A golf ball comprising:  
a dual core;  
an inner cover layer molded on said dual core, the inner cover layer comprising a high acid ionomer 5 including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid;

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an outer cover layer molded on said inner cover layer, said outer cover layer comprising a relatively soft polymeric material selected from the group

10 consisting of low flexural modulus ionomer resins and non-ionomeric thermoplastic elastomers; and

at least one outer core layer disposed about said dual core.

21. A golf ball according to claim 20, wherein said dual core comprises a center component and a core layer disposed about said center component, said center component comprises a material selected from the group

5 consisting of thermosets, thermoplastics, and combinations thereof.

22. A golf ball according to claim 21, wherein said core layer comprises a material selected from the group consisting of thermosets, thermoplastics, and combinations thereof.

23. A golf ball according to claim 21, wherein said at least one outer core layer comprises a material selected from the group consisting of thermosets, thermoplastics, and combinations thereof.

24. A golf ball according to claim 20, wherein the inner cover layer comprises a high acid ionomer resin comprising a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid.

25. A golf ball according to claim 20, wherein the inner cover layer comprises a high acid ionomer resin comprising a copolymer of about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid.

26. A golf ball according to claim 20, wherein the inner cover layer has a thickness of about 0.100 to about

0.010 inches and the outer cover layer has a thickness of about 0.010 to about 0.05 inches, the golf ball having an 5 overall diameter of 1.680 inches or more.

27. A golf ball according to claim 20, wherein the inner cover layer has a thickness of about .030" - .0375" inches and the outer cover layer has a thickness of about .030" - .0375" inches, the golf ball having an overall 5 diameter of 1.680 inches or more.

28. A golf ball according to claim 20, wherein the outer layer comprises a low flexural modulus ionomer resin which includes a blend of a hard high modulus ionomer with a soft low modulus ionomer, the high modulus 5 ionomer being a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, the low modulus ionomer being a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon 10 atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms.

29. A golf ball according to claim 28, wherein the outer layer composition includes 90 to 10 percent by weight of the hard high modulus ionomer resin and about 10 to 90 percent by weight of the soft low modulus 5 ionomer resin.

30. A golf ball according to claim 28, wherein the outer layer composition includes 75 to 25 percent by weight of the hard high modulus ionomer resin and about 25 to 75 percent by weight of the soft low modulus 5 ionomer resin.

31. A golf ball according to claim 20, wherein the non-ionomeric thermoplastic elastomer is a polyester polyurethane.

32. A golf ball according to claim 20, wherein the non-ionomeric thermoplastic elastomer is a polyester elastomer.

33. A golf ball according to claim 20, wherein the non-ionomeric thermoplastic elastomer is a polyester amide.

34. A golf ball according to claim 20, wherein said at least one outer core layer comprises a material selected from the group consisting of thermosets, thermoplastics, and combinations thereof.

35. A multi-layer golf ball comprising:

a spherical dual core comprising an interior spherical center component and a core layer disposed about said interior spherical center component;

5 an inner cover layer molded over said spherical dual core, said inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

10 an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8

15 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi; and

20 at least one outer core layer disposed between said dual core and said inner cover layer.

36. A multi-layer golf ball comprising:  
a dual core component;  
an inner cover layer molded over said dual core  
to form a spherical intermediate ball, said inner cover  
5 layer comprising an ionomeric resin including about 17%  
to about 25% by weight of an alpha, beta-unsaturated  
carboxylic acid and having a modulus of from about 15,000  
to about 70,000 psi;  
an outer cover layer molded over said spherical  
10 intermediate ball to form a multi-layer golf ball, the  
outer layer comprising a non-ionomeric thermoplastic  
selected from the group consisting of polyester  
elastomer, polyester polyurethane and polyester amide,  
said outer cover layer having a modulus in a range of  
15 about 1,000 to about 30,000 psi; and  
at least one outer core layer disposed between  
said dual core and said inner cover layer.

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